No effect without ethics

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Chapter 2

Trends in reduction of seclusion in Dutch mental health care, 2007-2012

"That which is used - develops. That which is not used wastes away."

- Hippocrates -

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Abstract

In 2006 the Dutch Association of Mental Health and Addiction Care (GGZ Nederland) set the aim of reducing seclusion incrementally by 10% each year. More than 100 projects have been started since then, funded by the Dutch Healthcare Authority *(NZa)* with a total budget of 35 million Euros. The present study, based on Argus register findings, investigates the trends in reduction of seclusion over the period 2007-2012. It shows that half of the mental health care institutions managed to achieve a yearly reduction of 10% in number and duration of seclusion, over a period of several years. It appears that this success rate is mainly achieved by the institutions that prioritize reduction of coercion and invest in institution-wide policies as well as in scientific research. The other half of the institutions showed much less reduction and sometimes even an increase of seclusion.

Introduction

In recent decades the use of coercive interventions and in particular seclusion in Dutch mental health care institutions has been a topic of debate. The use of seclusion and restraint is controversial and regularly attracts the attention of politicians and the media. In the Netherlands, seclusion seems to be applied more frequently or for a longer period of time than in other countries (Lendemeijer & Shortridge-Baggett, 1997; Vrijlandt, 1998). A reliable cross-national comparison on the use of coercive measures is however hard to make, due to the lack of reliable data (Janssen, Hutschemaekers & Lendemeijer, 2005; Janssen et al., 2008). Data on the frequency and duration of coercive interventions, as well as the number of patients involved, were not nationally registered in the Netherlands until recently.

Projects for reducing coercive interventions in Dutch mental health care institutions have been developed since 1998 (Abma, Widdershoven & Lendemeijer, 2005; Berghmans, Elfahmi, Goldsteen & Widdershoven, 2001; Voskes, Theunissen & Widdershoven, 2011). A wide range of interventions were introduced (Voskes, Theunissen & Widdershoven, 2011). These interventions can be grouped into five clusters: (1) care and contact, (2) prevention, (3) learning from experience, (4) participation, and (5) cooperation (Voskes et al., 2011). Apart from new methods, structural and organisational innovations have been developed. Examples are comfort rooms, nurse stations behind accessible counters instead of in offices, and family rooms. Other structural innovations concern the adaptation of work plans and team meetings (e.g. using risk assessment (CrisisMonitor) and support activities (evaluation, feedback Argus data, and training). Finally, cultural changes have taken place. On a cultural level, the five clusters of interventions imply value changes: 'from control to contact', 'from reactive to proactive', 'from routine to learning', 'from object of care to partner of care' and 'from closed to open', and (Voskes et al., 2011).

For a long time, it has been difficult to measure the effects of the interventions and innovations around seclusion because of a lack of complete and reliable data. The available Health Care Inspectorate data were not reliable (Vruwink, Mulder, Noorthoorn, Uitenbroek & Nijman, 2012). In 2006, five mental health care institutions, in collaboration with the Dutch branch organisation for Mental Health Care (GGZ Nederland) and the Dutch Health Care Inspectorate (IGZ), set up the Argus dataset. This dataset covers six main coercive measures, namely seclusion, isolation and other containment in a specific room, physical restraint, forced medication, forced hydration and nutrition, and other (therapeutic) coercive measures (GGZ Nederland, 2004).

Since 2007 a growing number of institutions have used Argus. In November 2010 the Dutch branch organisation of Mental Health Care determined the final content of the dataset and made this known to the associated institutions. Participation in the register became mandatory in 2012 for all bodies financed by the Dutch Healthcare Authority (www.veiligezorgiederszorg.nl). The Ministry of Health, Welfare and Sport (VWS) nowadays requires all mental health care institutions to register coercive measures in Argus (GGZ Nederland, Ministerie van VWS & IGZ, 2011). In 2012, 55 institutions were using the Argus dataset.

In 2006 the Dutch branch organisation of Mental Health Care set the aim of reducing seclusions by 10% per year. Based on the Argus data, this article evaluates whether this aim has been reached. It will also assess whether seclusion is being replaced by other interventions such as forced medication. Finally, it will examine to what extent the number of seclusions depends on the type of institution and on specific patient profiles.

Research questions

The following research questions are addressed in this article:

1. What is the current situation regarding the number and duration of seclusion and what are the trends between 2007 and 2012?

2. Is seclusion being substituted by other coercive measures?

3. To what extent is seclusion determined by the type of psychiatric disorder or a particular type of ward or hospital?

Method and Material

Argus dataset

The Argus dataset consists of 6 coercive measures, described and defined as follows (GGZ Nederland, 2004):

1. *Seclusion:* This is defined as the seclusion of a patient for care and treatment in a specifically designated room that has been ratified by the Secretary of Health, Welfare and Sport as a distinct seclusion room. An open-door stay in the seclusion room does not count as seclusion.

2. *Isolation and other containment in a specific room:* This is defined as isolating and containing a patient for care and treatment in a specifically designated room for isolation. This is a low-stimulus single room furnished with a bed, table, chair, wardrobe, and washing facilities. Isolation and containment never take place in the patient's 'own' bedroom. If the isolation room does not meet the specific Healthcare Building criteria (Na 2004: TNO, 17), the isolation is recorded as containment taking place in 'any other area'.

3. *Physical restraint:* This is defined as restricting a patient in his movement options, either by using mechanical devices or by physically keeping hold of the patient. The objective of physical restraint is that the patient cannot leave his or her location or cannot move certain limbs. Mechanical devices can include straps, ties, and belts for strapping the patient into a chair or a bed; they can also include fences, transparent partitions, or a bed tent for restricting movement options in bed.

4. *Parenteral (forced) medication:* This is defined as forced medication intravenously administered to the patient.

5. *Forced hydration and/or nutrition:* This is defined as fluids or food, orally forced or parenterally administered.

6. *Other coercive measures:* These include coercive measures with a therapeutic intent, other than the above-mentioned physical or spatial interventions (e.g. a mandatory stay in the patient's bedroom).

Data about restrictive interventions are recorded in the Argus dataset. For each intervention the date, start time, and, except for forced medication, end time are recorded. Furthermore, the degree of resistance on the part of the patient is registered.

Measuring units: number and duration of interventions in relation to duration of admittance

An intervention is defined as a period in which an intervention (seclusion, isolation, etc.) is used without intermittence for 24 hours or longer. In the analysis of trends two measures may be used, the number of interventions in relation to the number of admissions and the intervention's duration in relation to admittance duration (in hours). For enforced medication, the event rate – the number of events per day - was calculated (El-Badri & Mesllop, 2002). The first measure is particularly significant in wards with a large number of admissions and lots of short-term interventions (Janssen et al., 2009; Janssen et al., 2011; Janssen et al., 2014). The second and third measure are especially relevant to treatment wards, wards for the elderly, or forensic wards as they have a longer duration of admittance (Janssen et al., 2011).

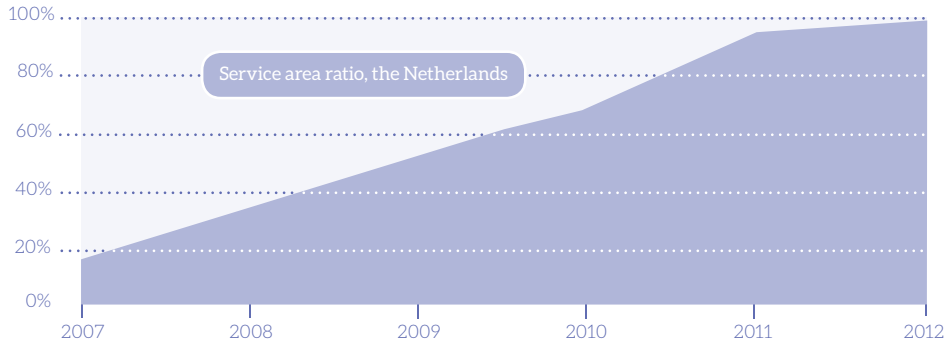
Reliability and validity of the data

The Argus data were examined for reliability and validity in several rounds. In the first place, they were linked to the background data of the Dutch healthcare finance system of diagnosis/treatment units (DBC). If this resulted in 95% reliability, the data were included in the analysis. Second, results of individual institutions were shared with the project managers and wards, asking them if the outcome was recognized. If the results raised questions, these were addressed in a site visit.

Research population

Recording in the Argus register has gradually grown from a few institutions in 2007 to almost all institutions in 2012 (see Figure 1). In 2010, data from 17 institutions were registered, 67% of the total service area in the Netherlands. In 2011 this had grown to 29 institutions and seven Psychiatric Units of a General Hospital (PAAZ), 93% of the total service area in the Netherlands. In 2012, the Argus register received data from 55 providers, who together make up 97% of the Netherlands service area.

Figure 1. Representation degree of the register



Analyses

The institutions handed over anonymized Argus and patient data to the national Argus register. Next, the submitted data were checked for reliability and completeness. Analyses were carried out at the register and fed back to the participating institution. The first research question is answered with straight counts and tested against a chi-square test. The second research question is answered by straight counts over 2011 and 2012. The third research question is investigated through a multi-level logistic regression analysis (Skrondahl & Rabe-Hesketh, 2003; Steinert et al., 2010).

Results

Interventions: number and duration

Table 1 presents an overview of coercive measures, their duration in hours, and the number of patients involved in 2012. The number of times that patients were secluded increased in 2012 by 0.9% compared to 2011, while the total number of seclusion hours decreased by 5%. Adjusted for the number of hospital admissions, the number of seclusions per 1000 admissions was reduced with 10% and the number of seclusion hours per 1000 admission hours with 33%.

Table 1. Coercive measures in 2012, sorted by type

	Interventions				Duration in hours			Patients
	Total	Resistance		At own request %	Total	Mean	Median	% of total admissions
		Yes%	No%					
Seclusion	9469	52,3	39,0	8,6	389497	59,3	17,7	6,5
Isolation	4251	37,2	52,6	10,1	113279	45,5	4,2	2,3
Containment in other rooms	3664	51,3	42,6	6,1	196516	229,7	30,1	1,1
Physical restraint	2920	23,5	67,6	8,8	126142	68,9	11,7	1,0
Forced medication	3336	100						1,4
Hydration / nutrition	258	100						0,5
Other	18	100						0,2

Table 2 presents an overview of seclusion reduction over the years. The table shows that the number of patients undergoing seclusion decreased by 44% in five years. The mean and median of the seclusions are reduced by more than 50% in this period. The last column shows that in eight institutions which have registered in Argus for at least 5 years, a 45% reduction of seclusion hours per 1000 admission hours was achieved. Over the

years, a decrease is shown in both the duration of seclusion and the number of patients subjected to seclusion. Since 2008, the relative number of seclusions has declined by almost 50%. The duration of seclusion has also decreased with around 50% over the years. The trend is that fewer patients are secluded, and for a shorter period of time.

Table 2. Trends in seclusion for 2008-2012

Year	Institutions recording in Argus	Wards (N)	Seclusions	Patients	% of seclusions per total no. of admitted patients	Hours, mean and median		Decrease for the period of recording in % of hrs. per admission hrs.				
								'08	'09	'10	'11	'12
2008	8	68	3685	1338	11.8	128	92					45%
2009	14	198	4750	2322	10,8	71	43					17%
2010	18	227	5525	2722	10.2	70	38					17%
2011	21	375	7476	3743	8.5	62	35					13,5%
2012	53	506	9469	7198	6.5	58	17					

Of the 21 institutions recording in Argus both in 2011 and 2012, 11 institutions achieved a reduction in the number of seclusion hours. For seven institutions, this rate was more than 10%. In 6 institutions the numbers were constant. Four institutions showed an increase in seclusion hours (Noorthoorn et al., 2014).

Substitution

An important question is whether the reduction of seclusion leads to substitution by other types of coercive measures. Data on this are available for the period 2011-2012 (Table 3). Findings show most measures are constant or decrease, apart from physical restraint. However, this measure occurs primarily in the elderly, while most other measures occur in adult patients. In five institutions reduction in seclusion was accompanied by an increase in forced medication, implying substitution of one measure by another (Noorthoorn et al., 2014). In one of these institutes, longitudinal analysis of all coercive measures showed a clear decrease, despite an increase in forced medication (Verlinde, 2014).

Table 3. Changes in coercive measures, sorted by type

		2011	2012	Percentage
Hours per 1000 admissions	Seclusion	133	104	-25%
	Isolation	44	45	+3%
	Containment in other rooms	72	40	-45%
	Physical restraint	29	32	+10%
	Forced medication	56	36	-35%
Hours per 1000 admission hours	Seclusion	2,72	2,40	-12%
	Isolation	0,90	0,90	+2%
	Containment in other rooms	6,02	4,45	-21%
	Physical restraint	0,92	1,07	+16%
	Forced medication (event rate)	0.44	0.37	-12%

Table 4 shows the association between psychiatric disorder, type of ward, and the number of seclusion hours in 2012. Admission wards and forensic wards have the highest number of seclusions in comparison to other wards. The multilevel analysis shows that psychotic disorder, schizophrenia, and bipolar disorders are associated with a higher rate of seclusion, while adjustment disorder, depression, and developmental disorders are associated with a lower rate. Younger age, male gender, staying on an admissions ward, forensic ward, child and adolescent as well as a long stay ward are associated with a higher rate of seclusions. Urban location as well as smaller hospital size (i.e. more admission ward beds) are also associated with a higher rate of seclusions. The final model showed a Mcfadden's r2 of 0,25, implying 25% explained variance, which is reasonably good (Mcfadden, 1974).

Table 4. Patient characteristics and seclusion risk

	Univariable patient level analysis			Final model Multilevel analysis seclusion / admission adjusted for admission time**	
	No Seclusion	Seclusion	Significance Differences*	EX (B)	95% CI EX(B)
N =	58169 (94%)	3535(6%)			
Personal characteristics***					
Age < 35 years	31%	45%	++	1.56	1.44 – 1.69
Male	56%	66%	++	1.19	1.19 – 1.29
Partner	15%	12%	++	0.81	0.71 – 0.90
Ethnic minority	9%	13%	++		
Diagnosis***					
Adjustment disorder	6%	4%	++	0.69	0.56- 0.85
Anxiety disorder	8%	4%	++	0.59	0.49 – 0.72
Depressive disorder	14%	6%	++	0.52	0.45 – 0.62
Bipolar disorder	6%	11%	++	1.40	1.22 – 1.61
Psychotic disorder	10%	17%	++	1.18	1.05 – 1.32
Schizophrenia	13%	19%	++	1.17	1.05- 1.31
Organic disorder	5%	4%	+		
Substance abuse	21%	25%	++		
Attention deficit hyperact disorder	3%	1%	++		
Autism	1%	1%	-	0.76	0.64 – 0.89
Asperger	4%	3%	++		
Mental handicap	1%	1%	-		
Personality disorder	25%	26%	-		
Ward and hospital characteristics****					
Admission	90%	10%	++	4.48	3.89 – 5.17
Child and adolescent	95%	5%	+	1.49	1.10 – 2.03
Longstay wards	93%	7%	+	1.46	1.22 – 1.74
Elderly	97%	3%	++		
Forensic	89%	11%	+	8.04	5.97 – 10.82
Urban service area	93%	7%	+	1.41	1.28 – 1.59
Rural service area	95%	5%			
Large, integrated institution	94%	6%	-		
Medium institution	92%	8%	+	0.51	0.46 – 0.55
Small institution	89%	11%	++		

* ++ P < 0.001 + P < 0.05

** The analysis was performed in 91972 admissions over 70664 different patients in 1484 wards.

*** Column percentages representing % patients with a characteristic in not secluded patients and secluded patients.

**** Row percentages representing % patients either or not secluded and secluded in a certain ward type.

Discussion

Between 2008 and 2012, institutions registering in Argus showed a decrease of 45% in the rate of seclusion per 1000 admission hours. The percentage of patients exposed to seclusion decreased by 45%, from 11.8% in 2008 to 6.5% in 2012. The mean and median duration per seclusion decreased by more than 50%. Research among 12 institutions, conducted in 2002, showed that 15.7% of all admitted patients were secluded (Janssen, Hutschemaekers & Lendemeijer, 2005; Janssen, Noorthoorn, de Vries, Hutschemaekers, Lendemeijer, 2008).

Hospitals participating in reduction efforts for a larger number of years showed more stable reduction effect than hospitals having been engaged for a shorter period of time. Nationwide, a reduction in seclusion was accompanied by a decrease in other interventions, including forced medication. Some institutions did, however, show an increase in forced medication.

While the figures for the final year represent 95% of the service area in the Netherlands, the trend figures cover about 67% of the service area. The register's coverage has grown over the years. It is likely that institutions that joined at a later stage also implemented project activities at a later stage and therefore achieved a less substantial reduction. However, it is also possible that they had already achieved reduction before they started recording their data in the Argus register.

Experiences in the USA show that a period of at least five years is required for a substantial cultural change among employees (Huckshorn, 2004). This impression is confirmed by the present study. The largest effects are found in institutions where the issue has been on the agenda for a longer period of time. Qualitative research into best practices in the field of the reduction of seclusion in the Netherlands (Voskes et al., 2011) shows that the development of new methods is not sufficient. New interventions should be accompanied by a change in organisational structure and culture, in order to actually create new practices. Such changes take longer than the introduction of new methods. The recent development of High & Intensive Care, which is in line with international developments in this area, may foster further reduction of seclusion, as it combines changes in method, structure and culture (Van Mierlo, Bovenberg, Voskes & Mulder, 2013).

Measuring the effects of projects aimed at reduction of seclusion is important as such, but can also provide an incentive for improving the projects. This also holds for quantitative and qualitative research into reduction of coercive more generally. In the past years, three trials were carried out, while within twelve institutions qualitative research was conducted. The trials show that early recognition (Fluttert, Van Meijel, Nijman, Bjørkly & Grypdonck, 2010), risk assessment (CrisisMonitor) (Van de Sande et al., 2011), use of first choice medication in aggression (Georgieva, Mulder & Noorthoorn, 2012), and measuring arousal in the monitoring of aggression (Kuijpers, Nijman, Bongers, Lubberding & Ouwerkerk, 2012) are effective in reducing seclusion. Using an integrated range of interventions is promising, provided that such interventions are adequately implemented and warranted. Following the USA's 'six-core strategy plan to reduce seclusion and restraint' (Huckshorn, 2004), a systematic and nation-wide coordinated approach, supported by scientific research and to-the-point feedback, is recommended.

Conclusions

In general, this study shows a marked decrease in the number and duration of seclusion between 2007 and 2012. Half of the institutions under examination show stable progress. These institutions have realized a reduction of more than 10% in number and duration of seclusions for several years. The other half is less successful, and not able (yet) to reach a reduction of 10% each year. Concerns raised in the political arena (VWS, 2012) about substitution of seclusion by other interventions are not confirmed. Next to the decline in duration and number of seclusions, an even larger decline can be seen in the duration and number of isolations or other coercive measures such as making the patient stay in the own room. In most institutions where the use of seclusion decreased, forced medication was not increased. In a small number of institutions reduced seclusion was accompanied by an increase in forced medication. Given the relatively early stage of health care innovations aimed at reduction of seclusion in the Netherlands, continuation of efforts and scientific evaluation are crucial in securing progress and realizing further reduction of seclusion in mental health care.

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